

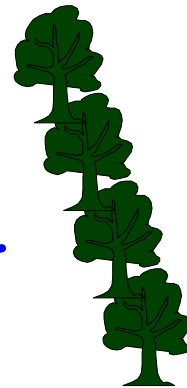
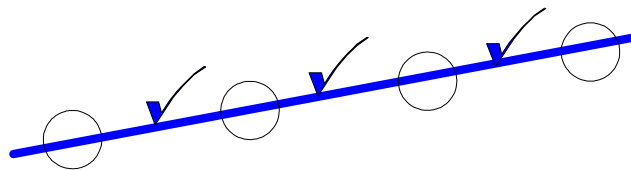
Colorado River Salinity Control Program

McElmo Creek Unit

Monitoring And Evaluation

2005 Report

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McElmo Creek Unit, Colorado River Salinity Control Program

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Part 1
M&E EXECUTIVE SUMMARY
HYDROSALINITY

Project: McELmo Creek Unit

- The project plan is to treat 21,550 acres with improved irrigation systems.
- To date, 9317 acres have improved irrigation systems.
- The project plan is to reduce salt loading to the Colorado River system by 46,400 tons of salt.
- In FY2004, salt loading has been reduced by 4,392 tons/year.
- The cumulative salt load reduction is 28,474 tons/year.

Cost effectiveness-

- The *planned* cost per ton of salt saved with prior year contracts is \$35.80/ton.
\$/Ton is based on the following formula:

FA + TA = Total Cost X Amortization Factor = Total amortized cost
Total amortized cost divided by total annual tons salt saved = Cost/Ton

FA is total dollars obligated in EQIP & Parallel Program (including wildlife).
TA is 67% of the FA (This number includes education and monitoring).
Amortization factor for 2001 is .081

M&E EXECUTIVE SUMMARY
ECONOMIC & SOCIAL

CONTRACT INACTIVITY

- During the past fiscal year, were there any contracts found in non-compliance, or were there any cancelled contracts that had remaining items to complete.
☒ Yes No
- If yes, indicate the level of significance or insignificance: *Insignificant in relation to the whole program.*
- _____

OTHER PROGRAM BENEFITS

- Considering changes in crop production costs and returns as a result of the salinity practices, has there been a:

☒ Positive effect

☐ No effect

☐ Negative effect

Explain: *Many participants have told of increased crop production on the same acreage due to increased irrigation efficiency. Of the 20 participants polled, 10 realized a substantial gain. Ten realized at least a minimal economic gain.*

- Is there information collected that indicates effect of program on economic and environmental benefits to the community?

☒ Yes

☐ No

Explain: *Of the 20 participants polled all think that the program has a substantial positive affect on the environment and economic conditions to the community. Specific comments range from "the best program in the government" to "I wish all programs were as effective."*

M&E EXECUTIVE SUMMARY FOR "OTHER RELATED ITEMS"

- IRRIGATION INDUCED EROSION-** Does the project award ranking points for control of irrigation induced erosion?

Yes ☒ No

- IRRIGATION WATER MANAGEMENT PROGRAM-** Is there an effective funded education program?

☒ Yes ☐ No

Briefly Explain: *NRCS field office conducted a successful workshop concerning methods of determining timing of irrigation events.*

Part 2

M&E EXECUTIVE SUMMARY- McElmo WILDLIFE

**HEP/HSI Data involving accomplishments made by I-EQIP, EQIP, and parallel program
1996-2005**

Species	Cumulative HUV's 2004	Cumulative HUV's 2005	Net Change for 2005
	(Applied)	(Applied)	
Pheasant	-252.36	-326.39	- 74.03
Mallard Winter	+95.49	+110.98	+ 15.49
Mallard Breeding	-644.24	- 827.30	- 183.06
Yellow Warbler	-14.30	-17.89	- 3.59
Meadow Vole	- 70.42	- 93.41	- 22.99
Marsh Wren	+85.66	+97.21	+ 11.55
Screech Owl	- 96.83	- 100.76	- 3.93
Snipe	+18.32	+ 20.20	+ 1.88

Acres of Wildlife Habitat Applied 1990-2005

	Cumulative acres 2004	Cumulative acres 2005	Net change for 2005
Upland	406.70	729.40	+ 322.70
Wetland	335.49	359.09	+ 23.6

Wetland Data 1990-2005

Cumulative acres impacted year 2004	Cumulative acres impacted year 2005	Net AREM Unit change 2004	Net AREM Unit change 2005	Net change for 2005
134.39	161.79	1.95	+4.43	+6.38

Funding for Wildlife Habitat 1990-2005

% of total funds spent on wildlife through 2003	% of total funds spent on wildlife through 2004
2.7%	2.1%

Explanation of the above results and planned wildlife program adjustments for next fiscal year: **Losses of habitat values increased (at least statistically) in 2005. This may be attributed to the large number of contracts we planned and implemented without wildlife (only 1 in the McElmo Unit was planned for wildlife) but it may also reflect the statistical analysis. We changed the analysis to reflect the change in average size of land units (smaller). This should more accurately reflect net gains and losses than the old statistics. Net wetland units increased due to enhancement efforts (on one land unit in particular).**

There still appears to be a problem with the Mallard Breeding HUV figures although it is not as dramatic with the new statistical figures. On contracts applied prior to 1997 we showed a net gain in HUVs. For some reason the statistics are still showing negative numbers since then. We have not changed our planning and implementation strategies to the extent that we should be seeing these losses which appear to be somewhat out of proportion for the area we are working in. The resident mallard population appears to be growing rather than diminishing. This includes the breeding population. Much of this could be attributed to the warmer than usual open winters we have experienced and the fact that mallards seem to adapt to encroachment of development as long as the habitat niche stays intact.

The fact that we are prioritizing good habitat improvement applications is helping our replacement efforts. These applications are selected off the top of our list. The intent is to capture the best opportunities for habitat benefits in order to catch up with losses over the past 16 years of the program. This may also be escalated with offsite improvement opportunities as the program allows.

Part 3

M&E REPORT, WILDLIFE

I. History and Background

A. Project Setting

The McElmo Creek Unit, known locally as the Montezuma Valley, is in the southwest corner of Colorado within Montezuma County. The City of Cortez, centrally located in the project area, is at an elevation of 6200 feet above mean sea level. The McElmo Creek watershed originates in the lower foothills of the LaPlata Mountains to the East. Its north boundary is the Dolores River Canyon Rim and the South by Mesa Verde and the Ute Mountain to the Southwest. McElmo Creek is a tributary to the San Juan River.

The McElmo Creek basin, having a limited watershed area, is a relatively dry basin under natural conditions. Montezuma Valley Irrigation Company (MVIC), the major user and distributor of irrigation water, diverts approximately 116,000 acre feet of Dolores River water annually (1957-1973 data) into the Montezuma Valley. Diverting water from McPhee reservoir on the Dolores River through a tunnel and extensive canal system, MVIC presently distributes water to approximately 29,000 acres. Return flows from irrigation and municipal discharges constitute most of the continuous channel flow in McElmo creek.

Mancos Shale underlies much of the Montezuma Valley. This shale is of marine origin with a high salt content, and provides the main salt source for the return flow into McElmo Creek. Excessive irrigation and seepage from delivery systems cause deep percolation. This water dissolves salts, which move downward until they reach McElmo Creek, then the San Juan River, and finally the Colorado River.

The farmland elevation ranges from 5,800 to 7,000 feet. The annual precipitation is nearly 12 inches, including snowfall.

B. Methods of Wildlife/Habitat Analysis for EIS

The Habitat Evaluation Procedures (HEP) were used on six alternative plans including future without. An interagency team determined the change of Habitat Unit Values (HUV) for all the alternatives. Eight wildlife species models were used, representative of the ten prevalent cover types in the study area (see list below).

SPECIES	COVERTYPES
➤ marsh wren	➤ Cropland (AC)
➤ mallard-winter	➤ Annual Herbland (ANNHERB)
➤ mallard-breeding	➤ Perennial Herbland (PERHERB)
➤ ring-necked pheasant	➤ Woodland (WOODY)
➤ great-horned owl	➤ Pasture and Hayland (AP)
➤ yellow warbler	➤ Native Rangeland (SSSB)
➤ meadow vole	➤ Orchards and Vineyards (AO)
➤ common snipe.	➤ Palustrine Emergent Wetlands (PEM)
	➤ Streams, Rivers and Canals (RIVERSn)
	➤ Lakes, Ponds and Reservoirs (LAKESn)

NRCS also conducted a wetland inventory between 1979 and 1980. These wetlands were mapped, classified according to Circular 39 and the Cowardin System for Classification of Wetlands and Deepwater Habitats, and given a wildlife value rating using a system developed by Francis Golet (which gives wetlands a numerical value). This system rates factors such as water regime, wetland class richness, size and juxtaposition.

C. EIS Conclusions

Mitigation is a mechanism for addressing adverse project impacts on fish and wildlife resources. It can be accomplished by reducing, avoiding, rectifying or compensating adverse impacts. The Colorado River Basin Salinity Control Act, Public Law 93-320 as amended by PL 98-569: 88 Stat. 266, does not contain the word “mitigation”. It does provide for the “...voluntary replacement of incidental fish and wildlife values foregone;” NRCS developed wetland policy (7CFR 650.26) in compliance with N.E.P.A. Executive Order 11990. This policy was written to allow for certain policy exceptions to meet NRCS water quality and water conservations objectives. NRCS will make every effort to work with customers to voluntarily replace wildlife habitat using approved wildlife practices under the program.

D. EIS Commitments

NRCS will attempt to voluntarily obtain both upland and wetland habitat replacement with landowners participating in the program. No set upland acres impacted were specified in the EIS. The reason for this was that it was thought that changes to upland habitats were more subtle and less destructive to overall wildlife species composition and population densities. One upland cover type replacing another would not necessarily displace the species of concern. Changes in cultural practices or practice intensity would be of more concern. Upland habitat impacts would be tracked and replacement achieved as opportunities arise.

NRCS will install 310 acres of wetland habitat development. According to the recommended plan this will provide equivalent wetland values to those found in the 615 acres of wetlands projected to be lost.

Other agencies or entities, such as the Colorado Division of Wildlife, US Fish & Wildlife Service, Ducks Unlimited, etc., will be given the opportunity to assist with planning replacement practices, reviewing NRCS replacement efforts and evaluating practice effectiveness.

E. Changes Since EIS Was Issued

Since the EIS was issued there have been programmatic changes, staff changes and methodology changes within the program. Programmatic changes include the implementation of the Environmental Quality Incentives Program (EQIP) which has replaced the CRBSCP. For the most part, the program has mimicked the old Salinity program. Another programmatic change has been the implementation of the Basin Program which parallels the EQIP salinity program. This program is funded by the US Bureau of Reclamation with money distributed through the local Soil Conservation Districts. Staffing since the early days of the salinity program has been reduced substantially. This has distributed all planning and follow-up responsibilities evenly throughout a smaller staff, leaving less time for tracking and monitoring activities. Methodology changes have included the use of the Avian Richness Evaluation Method (AREM), developed for the study area by Paul Adamus, for tracking wetland quality changes and the development of a statistical analysis of the HEP data collected from 1990 to 1997 in order to project HSI's and estimate project impacts. All planned wildlife practices since 1997 are tracked by year, contract, and dollars for practices obligated and applied, as well as extent of practices planned and applied.

II. Current Methods

A. Assessments/Evaluation

AVIAN RICHNESS EVALUATION PROCEDURES (AREM)

Paul R. Adamus developed this evaluation method in cooperation with the Environmental Protection Agency for use in the "lowland wetlands of the Colorado Plateau" (specifically the Salinity Control Units in Utah, Colorado and Wyoming).

In 1994 the State of Colorado Natural Resources Conservation Service decided to adopt AREM for evaluating wetland impacts in the McElmo Creek, Lower Gunnison and Grand Valley salinity control units.

Evaluation of all McElmo Creek salinity contracts used this method.

Values were obtained by averaging the "six habitat scores weighted by species," multiplied by .01, and then multiplied by the acres to obtain unit values. Approximately 103.8 net wetland acres of the 615 acres projected in the EIS have been lost. Through creation of new and enhancement of existing wetlands we have perceived a net gain of 22.4 value points.

HABITAT EVALUATION PROCEDURES (HEP)

Since 1997, we have discontinued wildlife tracking and monitoring measures as outlined for the salinity program. In 1999, due to increased workloads and a 75% reduction in staff, we chose to track cost-share, acres and wildlife practices for EQIP salinity. A statistical analysis of HEP data (collected through 1998) was conducted to determine adequate sample size needed to calculate mean habitat suitability indices (HSI) with 95% confidence. The calculated mean is within + or -.1 of the real mean. Data from 1999 and 2001 was also collected, desired sample sizes were achieved, and mean HSI values calculated for each wildlife species (for contracts with and without wildlife practices). Habitat Unit Values (HUV's) were then calculated by multiplying HSI's by HUV's, to estimate project impacts. Tables 6 and 7 show the 1996-2002 tracking results as outlined above.

B. Wildlife Practices

Wildlife practices implemented to improve or develop upland and wetland wildlife habitat have changed over the years, mainly to reflect certain constraints and NRCS priorities (as well as those of the various agencies charged with oversight). We have eliminated the practice of pothole blasting in wetlands due to the continued encroachment of dwellings and the limited effectiveness. Pond construction has been limited by the Division of Water Resources permitting process and the limited values achieved by the practice. If shallow water is designed into the practice it becomes more effective. But the permitting process also limits shallow water construction. Management practices such as rotational grazing, setting aside alfalfa for nesting and small grain for food are not popular practices in the area.

The following practices are used effectively within the study area:

- Grass/legume cover plantings for upland nesting and roosting
- Shallow water developments for waterfowl and shorebird feeding and resting
- Tree and shrub plantings for upland wildlife nesting, roosting and food
- Fencing to exclude livestock grazing either permanently or during critical use periods
- Bioengineering practices to improve or protect riparian habitat
- Occasional development of irrigation to improve forage quality for wildlife

III. Results

A. Impacts

The following tables summarize the data tracked from one hundred and three (1990 through 1996) contracts. For the most part, all contracts have been applied and these figures represent our best assessment of impacts. In many cases projections of cover type changes (planned condition) have been substantially altered since 1990 due to changes in cooperators priority. Over the past 10 years, 50 out of 71 contracts with wildlife have either had the wildlife portion eliminated or the whole contract cancelled. This is evident in the applied replacement summary that follows.

Table 1
1990-1996 Wetland Impacts (Acres/Values)

Type	Existing		Applied		Change	
	Acres	Value	Acres	Value	Acres	Value
1	5.08	0.84	2.30	.54	-2.78	-.30
2	203.76	82.60	112.7	76.41	-91.10	-6.20
3	106.3	47.94	106.9	72.81	+.57	+24.87
4	10.80	5.95	9.30	7.95	-1.50	+.20
5	10.40	8.35	28.50	16.19	+10.10	+7.84
6	46.85	19.68	41.49	19.48	- 5.36	-.20
9	24.20	4.73	11.20	.87	-13.70	-3.86

(Wetland Summary—Applied Changes)

AVIAN RICHNESS EVALUATION PROCEDURES (AREM)

Paul R. Adamus developed this evaluation method in cooperation with the Environmental Protection Agency for use in the “lowland wetlands of the Colorado Plateau” (specifically

the Salinity Control Units in Utah, Colorado and Wyoming).

In 1994 the State of Colorado Natural Resources Conservation Service decided to adopt AREM for evaluating wetland impacts in the McElmo Creek, Lower Gunnison and Grand Valley salinity control units.

Evaluation of all McElmo Creek salinity contracts used this method.

Values were obtained by averaging the “six habitat scores weighted by species,” multiplied by .01, and then multiplied by the acres to obtain unit values. Approximately 114.44 net wetland acres of the 615 acres projected in the EIS have been lost. Through creation of new and enhancement of existing wetlands we have perceived a net gain of 22.4 value points.

Table 2

1990-1996 Cover Type Changes (Acres)

Cover	Exist	Apply	Change
AC	.00	109.97	+109.97
ANNHERB	327.90	189.70	-138.20
AP	2963.50	3118.3	+154.80
LAKESn	25.80	37.10	+11.30
PEM	375.20	259.60	-115.60
PERHERB	146.50	198.20	+51.70
SSSB	172.60	115.3	-57.30
WOODY	299.40	275.90	-23.50
AO	12.30	9.70	- 2.60

(Cover Type Summary—Applied Condition)

This report reflects where cover type changes occurred within 103 operating units. Its value is questionable as land has not remained constant (acres of farmland cover type change annually).

The cropland (AC) designation applies to annual row crops such as corn, barley, wheat or oats. The only grain or corn grown under surface irrigation in 1990 was small acres of either oats as a nurse crop for alfalfa or silage corn. Since that time sprinklers have allowed producers to incorporate 1 to 2 years of wheat, oats, or barley into their rotation. ANNHERB (weeds) figures have decreased mainly on farms where fields were idle during initial evaluation. The pasture and hay land (AP) figures have inversely increased over time as the means of irrigation changed, allowing greater irrigation efficiency and cost effectiveness in alfalfa production.

The increase in perennial cover (PERHERB) acreage reflects several larger plantings, which have been incorporated into some of the larger wildlife contracts.

Table 3
1990-1996 HUV Summary (Values)

Species	Existing	Applied	Change
Pheasant	3585.50	3484.70	- 99.80
Warbler	51.33	43.21	- 8.12
Mallard	4074.00	4552.40	+478.40
Breeding			
Mallard	6.6	97.75	+ 91.15
Winter			
Vole	873.40	866.93	- 6.47
Wren	101.73	143.75	+ 42.02
Owl	3235.43	2956.68	- 278.75
Snipe	326.33	259.43	- 66.90

HUV Summary—(Applied Condition)

PHEASANT:	Reflects intensive pasture and hay land management and loss of perennial cover along ditch banks and fence lines due to installation of sprinkler systems and buried pipe.
WARBLER:	Reflects loss of ditch bank associated willow habitat due to installation of buried pipe.
MALLARD	Reflects increases in acres of
BREEDING:	managed wetlands in association

	with increased acres of shallow water development.
MALLARD	Reflects increase in acres of
WINTER:	large ponds that may stay fully or partially open in winter and increased availability of waste grain associated with cropland.
MEADOW	Reflects more intensive
VOLE:	management of pasture and hay land.
WREN:	Reflects the enhancement, creation, and protection of cattail/bulrush habitat in several large wetland development and enhancement projects.
OWL:	Reflects the loss of mature cottonwoods and a decrease in cover type diversity adjacent to remaining nesting sites.
SNIFE:	Reflects a change in the suitability of types 1 and 2 wetlands as well as the losses of these wetland types due to increased water management activities.

B. Applied Practices (1990-1996)

- Cover plantings encompass perennial herbaceous grass/forb plantings in upland sites that were once cropland (either irrigated or non-irrigated).
- Fencing was done to exclude livestock grazing (either permanently or during critical wildlife use periods) from all cover types, but especially wetland habitat.
- Pipelines and sprinklers were installed on dry land or abandoned irrigated fields in order to produce denser cover for upland bird nesting or roosting, and higher quality forage for big game.
- Trees and shrubs were planted in rows and clumps to provide food, nesting and roosting cover for upland birds. Some plantings were also installed to provide browse for big game.
- Shallow water development includes ponds and potholes. Most pond designs incorporated both deep and shallow water. Potholes were blasted in existing palustrine emergent wetlands with little or no open water.
- Wetland and upland wildlife habitat management was dependant on landowners priorities. To be qualified and quantified as management, landowners need to adhere to NRCS management guidelines for the practices in place, the habitat type, the species of concern and the critical use period(s) of that species.

Table 4

(Replacement Summary-Applied 1990-1996)

Practices	Planned	Applied
Cover Plantings	74.9 ac	36.68 ac
Fencing	85,465 ft	53,785 ft
Pipelines	538 ft	507 ft
Tree/shrub Plantings	18.22 ac	8.86 ac
Sprinklers	240 ft	160 ft
Wildlife Upland Habitat Management	277.84 ac	152.9 ac
Shallow Water Development	18.43 ac	15.94 ac
Potholes	42	25
Wildlife Wetland Habitat Management	294.74 ac	297.3ac

C. EQIP Program Summary: Since 1997, we have discontinued wildlife tracking and monitoring measures as outlined for the salinity program. Currently we are tracking cost-share, acres and wildlife practices planned and applied. WHIP planning efforts within the priority unit were also recorded, however, as of 2003 we have discontinued using WHIP dollars within the salinity priority area.

1996-2005: 197 contracts, \$3,483,512.00 obligated, \$138,952.00 obligated for wildlife

	ft. Gated Pipe	ac. Brush Mgt.	ac. burn	ft. fence	ac. cover plantings	Ft. Shrub Plantings	ft. pipe lines	no. ponds	ac. grazing mgt.	ac. upland mgt.	ac. wetland mgt.
Planned	3074	5	20	18,200	1612	20,417	8678	14	240.2	395.0	61.8
Applied	3074	5	5	8350	105.1	15,833	8678	13	156.7	391.0	53.225.1

D. Cumulative Net Impacts (Acres/values by species gain/loss from table)

In 1999, due to increased workloads and a 75% reduction in staff, we chose to track cost-share, acres and wildlife practices for EQIP salinity. A statistical analysis of HEP data (collected through 1998) was conducted to determine adequate sample size needed to calculate mean habitat suitability indices (HSI) with 95% confidence. The calculated mean is within + or - .1 of the real mean. Data from 1999 and 2001 was also collected, desired sample sizes were achieved, and mean HSI values calculated for each wildlife species (for contracts with and without wildlife practices). Habitat Unit Values (HUV's) were then calculated by multiplying HSI's by HUV's, to estimate project impacts. The results are reflected in the HEP/HSI Data table in the executive summary.

These figures (except for Mallard Breeding) are somewhat consistent with losses/gains expected with program implementation and the HUV summary in Section III A. As stated previously in this report some of the figures are inflated because of encroachment of development. The pheasant and (it could be assumed) the mallard breeding losses reflect changes (either conversions or management) of primarily upland acres (perennial herbaceous, annual herbaceous, pasture and hay land and cropland). The yellow warbler figure reflects losses of willow habitat along ditch banks. Vole figures reflect losses of palustrine emergent wetlands (wet meadows) within over-irrigated pastures and changes in management. The owl figure reflects the loss of several stands of mature cottonwoods but, more importantly, the loss of diversity (ditch bank cover, fencerow cover) surrounding existing stands of cottonwoods.

Our efforts to enhance and create wetland habitat were greatly improved with one landowner's purchase of a tract of land to add to an already enhanced piece of property. With the help of the U.S. Fish and Wildlife Services (USFWS) Partners program we developed another 35 acres for wildlife. This project now encompasses close to 90 acres which adjoins a small reservoir in the county and is predominantly managed for wetland wildlife. Many upland species also benefit from the management of this acreage. It should be noted that our contribution to this project through Salinity EQIP was apportioned at 25% of the total benefits perceived. The rest of the benefits were attributed to USFWS Partners program contributions.

AREM-1997-2005

AREM WETLAND SCORES FOR EQIP PRIORITY APPLIED CONTRACTS						CONTRACTS NOT APPLIED			
NAME	ACRES	EXISTING	APPLIED	NET CHANGE	WETLAND TYPE	NAME	ACRES	EXISTING	WETLAND TYPE
Drew	4	1.66	3.88	2.22	LAC/PEM Complex				
Hinman	2	0.25	0.69	0.44	LAC/PEM Complex				
Vieira	2		1.7	1.7	LAC				
Schroeder	1		1.2	1.2	LAC				
McAfee	1.5	0.16	0.87	0.71	LAC/PEM Complex				
Jones	0.5		0.13	0.13	LAC				
Moise	2.9	0.69	0.95	0.26	LAC/PEM Complex				
	2.1	1.95	2.59	0.64	LAC/PEM Complex				
C.Bauer	1.7	0.905	1.09	0.185	LAC				
	0.2	0.128	0.128	0	PEM				
Denny	15	10.19	10.74	0.55	LAC/PEM Complex				
Battlerock	1	0.19	0	-0.19	PEM				
Reimers	4.2	2.1	2.1	0	PEM/LAC Complex				
Forth	0.54	0.068	0	-0.068	PEM				
Thomas	4.5	8.82	10.95	2.13	PEM				
Hill	0.25	0.267	0.267	0	PEM/LAC Complex				
Millard	1.4	0.18	0	-0.18	PEM				
Thomas	26.6	52.14	56.59	4.45	PEM/LAC Complex				
Steves	.8	.025	0	-.025	PEM				
				0					
				0					
				0					
				0					
				0					
				0					
				0					
				0					
				0					
				0					
				0					
				0					
TOTAL				14.152					

IV. Discussion of Results

A. Problems/Issues

1. Procedures: Landowners' attitudes, smaller operating units and extensive development potential of rural properties have and will continued to limit our ability to achieve high quality, voluntary replacement. Wildlife practices in many of the older contracts had been deleted due to lack of interest on the part of the landowner. Many of our landowners are beginning to speculate and are subdividing their properties for development.

Currently, urban sprawl is substantially decreasing both quantity and quality of upland and wetland habitats and wildlife populations.

Cumulative impacts from NRCS salinity activities on agricultural land have had little effect on wildlife populations. In some instances the quality of habitat has increased where marginal cropland has become more productive under new irrigation systems and better management. The boom in west slope population growth has undermined many of the positive aspects of the program though. Achievement of any type of major habitat improvement may require going outside the bounds of the salinity area and working with individuals with wildlife as their priority. Within the area we need to focus on the "few" who sincerely wish to see their farms remain intact. Capitalizing on an increasing interest in "Conservation Easements" and the active participation of the local land conservancy, it may be possible to find more opportunities within the salinity boundary area. This should eliminate working with landowners whose priority is improving their irrigation system and "think" they want to improve habitat, but change their minds later.

We have also begun to evaluate program applications based upon the criteria of a specific resource. This way we are not "including" wildlife practices to just increase the funding opportunity for irrigation project (though we may develop improved irrigation in order to enhance wildlife habitat).

2. Assessment/Evaluation: With the current staffing levels and workload, the types of monitoring and evaluating procedures we are utilizing work well. It would be impossible to monitor and track changes to habitat on every land unit we are working on. This difficulty would be compounded by the continued encroachment of development which would somehow need to be extrapolated out of the assessment results. Again, our goal should be to work intensively with the few who are interested and have the resource potential.

B. Progress With Replacement:

Voluntary replacement efforts have basically met the expectation for the area. The established, long-term inhabitants have never been too enthusiastic about improving or developing wildlife habitat. One would have expected the large influx of new people to the region to have changed this outlook. However, it appears money is more of a motivating factor than wildlife resources. This is evident by the speculation in new subdivisions and housing units going in throughout the county. Within the boundary of the project area the average size of a "farm" is down to less than 40 acres. The one resource an individual is willing to improve upon is the water resource which, of course, positively affects land values and is a valuable resource in our semi-arid environment. For that reason replacing wetland for wetland is not a popular issue.

As stated earlier, for the most part NRCS impacts to habitat have been minor compared to the impacts of development and other activities over the past 14 years. We have lost some of our best habitat improvement opportunities due to encroachment of development in close proximity with potential projects during this time. Our greatest gains have been with a small number of landowners whose main interest is preserving the natural landscape and improving upon their water resources for wildlife and wetland development and enhancement. These properties are more substantial in size than the average wildlife project area.

V. Conclusion

The future potential for habitat development/improvement within the project area is limited. The fact that water shortages are now perceived as “real” will continue to hurt our efforts for achieving wetland replacement. Water resources are now becoming a more valuable commodity. This will lead to more projects which “save” water from evaporation and deep percolation (such as lateral piping and canal lining) which will, in turn, reduce the amount of seepage-induced wetlands. Upland cover types will continue to be impacted by the encroachment of development, which we have no control over.

In order to continue our attempt to replace habitat lost, we will continue to look off-site for possibilities. This can be accomplished by working with interested landowners in watersheds within the same geographic region and having similar cover types. More importantly, we could be working with landowners who have important habitat under their control. We will also look to the local land conservancy for assistance with locating landowners with this interest.

Monitoring and assessment efforts are still going to be influenced by staffing constraints and evaluation methods. Placing a value on a particular cover type is very subjective on the small acreage land units we are working with. HEP was developed to evaluate large projects which could be monitored over time with limited outside influence. It seems apparent that results from the statistical extrapolation of data from our HSI analysis is not working in some instances.